CLAIMS

1. A non-aqueous electrolyte secondary battery comprising a positive electrode, a negative electrode, a separator interposed between said positive electrode and said negative electrode, and an electrolyte,

wherein said positive electrode comprises a positive electrode active material comprising a particle of a composite oxide represented by a general formula:

$Li_xMe_{1-y-z}M_yL_zO_2$,

where said element Me is at least one transition metal element except Ti, Mn, Y and Zr, said element M is at least one selected from the group consisting of Mg, Ti, Mn and Zn, and said element L is at least one selected from the group consisting of Al, Ca, Ba, Sr, Y and Zr,

said general formula satisfies $1 \leqq x \leqq 1.05$, $0.005 \leqq y \leqq 0.1$ (with a proviso that $0.005 \leqq y \leqq 0.5$ is satisfied in the case of said element M being Mn) and $0 \leqq z \leqq 0.05$,

said separator comprises a plurality of laminated monolayer films,

said plurality of monolayer films each have a microporous structure, and

a positive electrode-side monolayer film selected from said plurality of monolayer films which faces said positive electrode comprises polypropylene.

2. The non-aqueous electrolyte secondary battery in

accordance with claim 1,

wherein said element Me is Ni and/or Co.

3. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein said element Me includes Ni and Co, said element M is Mn, and said general formula satisfies $0.1 \leqq y \leqq 0.5$.

4. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein said element Me includes Ni and Co, said element M is Mg, said element L is Al, said general formula satisfies $0.005 \leqq y \leqq 0.03$ and $0.01 \leqq z \leqq 0.05$.

5. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein said positive electrode-side monolayer film further comprises polyethylene, and the amount of said polypropylene is not less than 60 wt% relative to the total amount of said polypropylene and said polyethylene.

6. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein said element M is uniformly distributed in said particle, and said element L is distributed more in a surface portion of said particle than an inside of said particle.

7. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein when a radius of said particle is r, said

element L is distributed in a region within 0.3r from the surface of said particle at a concentration not less than 1.2 times higher than that in a region within 0.3r from the center of said particle.

8. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein at least one selected from said plurality of monolayer films has a pore closing temperature of 110 to 140°C.

9. The non-aqueous electrolyte secondary battery in accordance with claim 8,

wherein said monolayer film having a pore closing temperature of 110 to 140°C does not face said positive electrode and comprises polyethylene.

10. The non-aqueous electrolyte secondary battery in accordance with claim 9,

wherein said monolayer film having a pore closing temperature of 110 to 140°C further comprises polypropylene, and the amount of said polypropylene is not greater than 20 wt% relative to the total amount of said polyethylene and said polypropylene.

11. The non-aqueous electrolyte secondary battery in accordance with claim 8,

wherein said at least one monolayer film having a pore closing temperature of 110 to 140°C in said plurality of monolayer films has a thickness of not less than 8 μm.

12. The non-aqueous electrolyte secondary battery in

accordance with claim 1,

wherein said positive electrode-side monolayer film has a thickness of not less than 0.2 μm and not greater than 5 μm.

13. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein at least one of said plurality of monolayer films is formed by drawing a sheet obtained by extrusion in two directions.

14. The non-aqueous electrolyte secondary battery in accordance with claim 9,

wherein when said positive electrode-side monolayer film has an average pore size D1 based on a total pore volume measured by a mercury intrusion method, and said monolayer film having a pore closing temperature of 110 to 140°C has an average pore size D2 based on a total pore volume measured by a mercury intrusion method, $D1 < D2$ is satisfied.

15. The non-aqueous electrolyte secondary battery in accordance with claim 1,

wherein said battery is charged by a charge control system whose end-of-charge voltage is set to not less than 4.3 V.

16. A non-aqueous electrolyte secondary battery comprising a positive electrode, a negative electrode, a separator interposed between said positive electrode and said negative electrode, and an electrolyte,

wherein said positive electrode comprises a positive electrode active material comprising a particle of a composite oxide represented by a general formula:

$Li_xCo_{1-y-z}M_yL_zO_2$,

where said element M is at least one selected from the group consisting of Mg, Ti, Mn and Zn, and said element L is at least one selected from the group consisting of Al, Ca, Ba, Sr, Y and Zr,

said general formula satisfies $1 \leqq x \leqq 1.05$, $0.005 \leqq y \leqq 0.1$ and $0 \leqq z \leqq 0.05$,

said separator comprises a plurality of laminated monolayer films,

said plurality of monolayer films each have a microporous structure, and

a positive electrode-side monolayer film selected from said plurality of monolayer films which faces said positive electrode comprises polypropylene.